

What is claimed is:

1. An ultrasonic irradiation apparatus, comprising:

an ultrasonic generating unit including a plurality of piezoelectric elements configured to irradiate an ultrasonic wave;

5 a selection unit configured to select more than one of the piezoelectric elements among the plurality of piezoelectric elements, and configured to change the selected piezoelectric elements; and

a driving unit configured to drive the selected piezoelectric elements.

10 2. The ultrasonic irradiation apparatus according to claim 1, further comprising:

an ultrasonic imaging apparatus configured to obtain ultrasonic image data at a position in an object, including a focusing device configured to focus the ultrasonic wave irradiated from the ultrasonic generating unit; and

15 a display unit configured to display an ultrasonic image based on the ultrasonic image data.

3. The ultrasonic irradiation apparatus according to claim 2, wherein the ultrasonic generating unit includes the plurality of piezoelectric elements two-dimensionally arranged.

20 4. The ultrasonic irradiation apparatus according to claim 2, wherein the selection unit comprises:

a first substrate including a plurality of first electrodes connected to the piezoelectric elements; and

a movable second substrate including a plurality of second electrodes accessible to the

first electrodes.

5. The ultrasonic irradiation apparatus according to claim 4, wherein the plurality of the second electrodes are commonly connected in a predetermined pattern of arrangement.

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6. The ultrasonic irradiation apparatus according to claim 5, wherein the first electrodes are connected to the piezoelectric elements via signal lines.

7. The ultrasonic irradiation apparatus according to claim 6, wherein at least one of the first electrodes and the second electrodes comprise conductive brushes.

8. The ultrasonic irradiation apparatus according to claim 5, wherein the number of the first electrodes is greater than the number of piezoelectric elements.

9. The ultrasonic irradiation apparatus according to claim 8, further comprising:
a plurality of dummy elements connected to respective of the first electrodes which are not connected to the piezoelectric elements.

10. The ultrasonic irradiation apparatus according to claim 5, wherein the first and second substrate comprise curved opposing surfaces on which said first and second electrodes are respectively arranged.

11. The ultrasonic irradiation apparatus according to claim 10, wherein:
the first substrate includes a first cylinder;

the second substrate includes a second cylinder;

the first electrodes are arranged on an outside surface of the first cylinder; and

the second electrodes are arranged on an inside surface of the second cylinder.

5 12. The ultrasonic irradiation apparatus according to claim 11, further comprising a moving mechanism unit configured to relatively move the first cylinder along a surface of the second cylinder.

10 13. The ultrasonic irradiation apparatus according to claim 2, wherein the selection unit commonly connects the piezoelectric elements in an annular array pattern.

15 14. The ultrasonic irradiation apparatus according to claim 2, wherein the driving unit includes a delay unit configured to set delay times to driving signals of the piezoelectric elements.

15 15. The ultrasonic irradiation apparatus according to claim 2, wherein the ultrasonic imaging apparatus comprises:

an ultrasonic imaging probe; and

20 a rotation unit configured to rotate the ultrasonic imaging probe based on the focus of the ultrasonic wave irradiated from the ultrasonic generating unit.

16. The ultrasonic irradiation apparatus according to claim 2, further comprising an operation unit configured to set a position of the focus of the ultrasonic wave irradiated from the ultrasonic generating unit.

17. The ultrasonic irradiation apparatus according to claim 16, wherein the display unit is configured to display a cancer image, and the operation unit is configured to input information on the cancer image and set the position of the focus of the ultrasonic wave based on the input information.

18. An ultrasonic irradiation apparatus, comprising:

an ultrasonic generating unit including a plurality of piezoelectric elements configured to irradiate an ultrasonic wave;

a first substrate including a plurality of first electrodes connected to the piezoelectric elements;

a second substrate including a plurality of second electrodes located opposite the first electrodes and a common electrode connected to plural of the second electrodes;

a moving mechanism unit configured to relatively move the first substrate along a surface of the second substrate; and

a driving unit configured to supply driving signals for driving the piezoelectric elements to the common electrode.

19. An ultrasonic irradiation apparatus, comprising:

an ultrasonic generating unit including a plurality of piezoelectric elements configured to irradiate an ultrasonic wave;

a plurality of switches connected to the plurality of piezoelectric elements;

a controller configured to switch the plurality of switches in a predetermined pattern;

and

a driving unit configured to drive the piezoelectric elements in the predetermined pattern.

20. The ultrasonic irradiation apparatus according to claim 19, further comprising:

5 an ultrasonic imaging apparatus configured to obtain an ultrasonic image data of a position in an object;

said driving unit configured to focus the ultrasonic wave irradiated from the ultrasonic generating unit; and

10 a display unit configured to display an ultrasonic image based on the ultrasonic image data.

21. The ultrasonic irradiation apparatus according to claim 20, wherein the plurality of piezoelectric elements are two-dimensionally arranged.

15 22. The ultrasonic irradiation apparatus according to claim 20, wherein the controller commonly connects switches so that an annular array pattern of radiating piezoelectric elements is formed.

20 23. The ultrasonic irradiation apparatus according to claim 20, wherein the driving unit includes a delay unit configured to set delay times to driving signals of the piezoelectric elements.

24. The ultrasonic irradiation apparatus according to claim 20, wherein the ultrasonic imaging apparatus comprises:

an ultrasonic imaging probe; and

a rotation unit configured to rotate the ultrasonic imaging probe based on the focus of the ultrasonic wave irradiated from the ultrasonic generating unit.

5 25. The ultrasonic irradiation apparatus according to claim 20, further comprising an operation unit configured to set a position of the focus of the ultrasonic wave irradiated from the ultrasonic generating unit.

10 26. The ultrasonic irradiation apparatus according to claim 25, wherein the display unit is configured to display a cancer image, and the operation unit is configured to input information on the cancer image and set the position of the focus of the ultrasonic wave based on the input information.

27. An ultrasonic irradiation apparatus, comprising:

15 an ultrasonic generating unit including a plurality of piezoelectric elements configured to irradiate an ultrasonic wave;

a controller configured to set a size of an aperture defined by irradiating piezoelectric elements based on a focal distance of a ultrasonic wave irradiated from the ultrasonic generating unit; and

20 a selection unit configured to select plural of the piezoelectric elements based on the set size of the aperture.

28. The ultrasonic irradiation apparatus according to claim 27, wherein the controller reduces the size of the aperture when the focal distance is large, and enlarges the size of the

aperture when the focal distance is small.

29. The ultrasonic irradiation apparatus according to claim 27, wherein the controller reduces the size of the aperture when the focal distance is small, and enlarges the size of the

5 aperture when the focal distance is large.